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ABSTRACT

This booklet is the first of three sequels to "A Guide to the Selection of Instructional Methods." Following a brief introduction, a discussion of the most common methods used in mass instructional techniques deals with the strenghts and weaknesses of lectures and similar expository techniques, film and video presentations, educational broadcasts, and mass practical and studio work. In addition, the different roles that instructional materials can play in mass instruction situations are examined, and the choice of instructional materials for specific mass instruction situations is briefly considered. A schematic representation depicting various types of instructional material vis-a-vis types of mass instruction situations is included, and four sources for further reading are listed. (KM)

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A guide to the use of mass instruction techniques

Introduction

This booklet and the two others that accompany it ("A guide to the use of individualised learning techniques" and "A guide to the use of group learning techniques") are sequels to booklet number 2 in the series – "A guide to the selection of instructional methods" – which it is suggested should be read *before* the present booklet.

In "A guide to the selection of instructional methods", we saw how the selection of appropriate instructional methods should be the second key step in any systematic approach to course or curriculum design, following the formulation of the instructional aims and objectives (see booklet number 1, "Educational objectives"). We also saw how instructional methods can be divided into three broad groups, namely *mass instruction techniques*, *individualised learning techniques*, and *group learning techniques*, and took a brief introductory look at each type. In this booklet, we will take a much more detailed look at the first of these three groups, namely, *mass instruction techniques*. First, we will examine the methods themselves, identifying their main characteristics and discussing their respective strengths and weaknesses. Then we will take a brief look at the different roles that instructional materials of various types can play in mass instruction situations and give some guidance as to how to select instructional materials for specific purposes.

The main mass instruction techniques

In this section, we will discuss four of the most common methods that are used in mass instructional situations, namely *lectures and similar expository techniques*, *film and video presentations*, *educational broadcasts*, and *mass practical and studio work*. Within each of these categories, there are, of course, a wide variety of different approaches and tactics that may be adopted, but, as we will see, a number of generalizations can be made, and it is on these that we will concentrate. It should, incidentally, be emphasized at this point that the techniques of 'mass instruction' may well be received by small numbers of students (or even by individual students!) as well as by large audiences. Thus, the term 'mass' is used more in a qualitative than a strictly quantitative sense.

Lectures and similar expository techniques

Although the term 'lecture' is normally used in the context of tertiary education and training, we will take it to cover any situation in which a teacher or instructor talks to (or at!) a class of pupils, students or trainees. Despite a plethora of other teaching methods being available, the face-to-face expository talk or 'lecture' still holds a central position at many levels of education, and will undoubtedly continue to do so for some considerable time to come. It is therefore rather surprising that comparatively little is known about the *educational effectiveness* of the lecture. Also, what little information *has* been established as a result of controlled, empirical research is not particularly widely known, especially among practising teachers, lecturers and trainers. Thus, the strength with which opinions on the usefulness of lectures are held is frequently greater than the strength of the grounds upon which these opinions are based! In addition, the problem of defining what constitutes a 'good lecture' is exceedingly difficult, since several research studies have indicated that individual students appreciate not only different, but sometimes conflicting things in a lecture.

Some strengths of the lecture method

(i) Undoubtedly, one of the reasons that the lecture has retained its dominant place in the educational and training scene is that the method appears to be highly cost effective, since it enables high student/staff ratios to be achieved; 100 students can, for example, be taught just as effectively as 10 in a lecture situation.

(ii) Another point in the lecture's favour is that it appears to be just as effective as other teaching methods at conveying information *when well done*. The majority of studies which have compared the lecture method with other methods designed for developing lower cognitive skills have not been able to detect any difference that is statistically significant, and those studies which *have* shown a measurable difference have been approximately equally distributed either way. (It is worth pointing out, however, that *most* teaching methods are not particularly efficient at imparting information; a common figure quoted is approximately 40 per cent recall of information by students immediately after a lecture – and, unless reinforcement takes place, even this level of ability to recall material falls off rapidly with time.)

(iii) Many teachers feel more comfortable using the lecture method than they do using other, perhaps more participative, methods. Also, several studies have reported that the lecture method appears to be popular with students, al-

though this may be largely due to familiarity and to a lack of appreciation on their behalf of the possible advantages of alternative methods of teaching.

Some weaknesses of the lecture method

(i) One aspect of the lecture method which causes some concern is that its effectiveness is inevitably very dependent on the skills of the individual lecturer. The ability to organize and explain a topic does not come naturally except to a fortunate few individuals, while fewer still are able to capitalize on their personal charisma in order to 'capture' their audience. Some guidance on basic lecturing technique is given in another booklet in this series ("Some hints on how to be an effective lecturer"), and further, more detailed guidance can be found in the three books on the subject listed in the "Further Reading" section at the end of this booklet.

(ii) In addition, the resultant effectiveness of a lecture relies heavily on the ability of the students to *learn* from it. Here, the possession of appropriate *study skills* is an extremely important factor, and it may well be necessary to make a conscious effort to help students to develop good study techniques before the full educational potential of the lecture method can be realised.

(iii) Research studies aimed at comparing the lecture with other teaching methods have shown that it is not particularly effective in developing high-level thought amongst students (Bloom's *higher cognitive* areas), nor at teaching towards desirable attitudes (Bloom's *affective domain)* compared with methods (such as group discussions or participative simulations) which involve more student activity. Thus, the lecture may not be quite as economical as it is generally believed to be in terms of achieving the entire range of course objectives, especially if a teacher does not appreciate the limitations of lectures and fails to combine their use with other, more participative, methods.

(iv) Many of the disadvantages of the lecture method stem from the fact that students are normally completely passive in lectures, spending most of their time either listening or writing down notes. Thus, the method is intrinsically non-interactive, although it is possible to get round this deficiency by building in things like *buzz sessions* (short problem-solving or discussion sessions in which the students work on their own or in small groups and then feed back information based on the task set to the teacher and to the rest of the class).

(v) In a lecture, all students are forced to proceed at one pace, namely, that dictated by the teacher, with usually very little opportunity for feedback from the students. This inevitably produces a wide variation in understanding throughout a lecture class, making the method weak in terms of universal mastery of topics. Also, within a lecture structure, individual problems and difficulties cannot normally be dealt with in a satisfactory manner. A related difficulty is that the teacher's perception of a subject is not necessarily the same as that of the students in all cases.

(vi) Another problem caused by the passive nature of lectures is that student attention tends to fall off rapidly with time. This fall-off takes the form of an increasing frequency of attention breaks (sometimes called *microsleeps)* in which the student 'switches off' concentration for a short time. The length of time for which a student can maintain full attention to the task of listening and writing is called the *attention span*. In a typical 50 minute 'straight' lecture, research carried out at Glasgow University has shown that student attention span decreases steadily as the lecture progresses. Typically, it falls from about 12–15 minutes at the start of the lecture to around 3–5 minutes towards the end. Attention breaks usually last for about 2 minutes, although their pattern of occurrence is affected by a number of factors. It is found, for example, that if the lecturer incorporates deliberate breaks in the lecture (practical demonstrations, buzz sessions, visual stimuli and so on), the net effect is that the progressive decline in student attention is temporarily halted. Skilled timing of these variations can improve the attention span pattern considerably, and it is likely that any lecture time that is lost in providing these 'mental breathers' for students is probably more than recouped in terms of effective student learning.

Research findings seem to indicate that, for a straightforward, fact-giving lecture, the optimum time for the most effective transfer of knowledge is probably no longer that about 20 minutes, even with comparatively bright students; with young, immature or less able students, it is even shorter. Despite this, virtually all institutions continue to timetable lecture-type classes for much longer periods – anything from 40 minutes to two hours or more.

Thus, if they are to be used to optimum effect, the limitations of lectures *must* be recognized, both by course and curriculum planners and by the teachers, lecturers and trainers who actually work at the 'chalk face'. The latter, in particular, should realize that lectures are much more effective if they are used in conjunction with

a suitable combination of supportive and complementary teaching methods rather than on their own.

Film and video presentations

For many years, films have been widely used in education (and, even more commonly, in training situations) as a mass-instructional teaching method in their own right. With the arrival of the videocassette recorder, which makes it easier to show film-type programmes in the classroom, this practice has become even more prevalent. Thus, an ever-increasing range of films and videocassette programmes are now being made for all sectors of education and training. As well as being a teaching method in their own right, short films and video clips can, of course, also be incorporated into lecture-type presentations in order to provide illustrative visual stimulation and variety of approach.

Some strengths of film and video presentations

(i) Film and video presentations can, on occasions, be used as a highly effective 'lecture substitute'. They are particularly useful if the content has a high visual impact, where a variety of techniques such as animation, time-lapse photography and close-up work can be used to good effect.

(ii) Film and video programmes can provide an impression of life outside the classroom which would otherwise be inconvenient or perhaps impossible to achieve. They can, for example, show lifestyles in other countries, scientific processes at the microscopic level, complicated industrial processes, theatrical productions, and so on.

(iii) A professionally scripted and produced film or video programme may well be better structured than its lecture-type equivalent, and is almost certain to be more visually relevant and more stimulating than a lecture, even if the latter is supported by slides and other visual aids. Further advantages are that appropriate films or videos can help to add variety to lecture-dominated courses, and can be used to stimulate discussion and debate.

Some weaknesses of film and video presentations

(i) The most common mis-use of films and videos occurs when the media are used purely for convenience rather than for sound educational reasons. The use of a film or video should not be thought of as an easy option, or 'something to keep a class quiet'. Indeed, it is important that a teacher or instructor should carry out a critical preview of the programme in order to check on its quality and assess its relevance to the

course. This will enable the teacher or instructor to introduce the programme properly, to explain its context and to prepare for class discussion after it has been shown.

(ii) Another possible educational disadvantage of using film and video presentations is that the teacher or trainer effectively relinquishes control over his or her class for the duration of the presentation, handing over this control to the maker of the film or video. This makes it doubly important that such presentations should only be used where they offer *some distinct advantage* over other, more conventional methods of teaching in facilitating achievement of a particular set of objectives.

(iii) One practical disadvantage of both films and videos is that neither can be shown without the appropriate hardware. Also, there is often a financial implication associated with using a programme; indeed, in many cases, hiring or buying a film or video can be quite expensive, particularly if it is to be used in a commercial or industrial training context rather than in an educational situation.

(iv) An additional problem associated with the use of videocassette machines to record broadcast television programmes off-air is that there may well be copyright difficulties associated with showing the programmes in an educational or training situation. Although certain programmes are officially classified as 'educational', and may therefore legitimately be used with classes, the main television output (parts of which – documentaries, popular science programmes, etc. – may in fact have a high degree of educational relevance) *may not legally be recorded on a videocassette recorder for subsequent use with a class*. Some of these programmes are, however, available for purchase or hire from the appropriate broadcasting authorities or their agents..

Educational broadcasts

Broadcast radio and television have a long history of use in education and training, with programmes designed specifically for class use in schools and colleges being transmitted by a large number of broadcasting organizations in many parts of the world. In most cases, however, the role of such programmes has been limited to that of general interest, 'optional extra' or 'back-up' materials, and it is only since the mid-1960's that broadcasts of this type have been used as front-line teaching tools. This development was pioneered in Britain by the Open University (which was, it should be remembered, originally known as the 'University of the Air'); since then, 'broadcast lessons' have been used as a key part of similar

distance learning schemes in several other countries, including Israel, Canada and Norway. Strictly speaking, the use of broadcast radio and television programmes in a 'distance learning' as opposed to a 'classroom' situation should be classed as an 'individualised learning' technique rather than a 'mass instruction' technique in the sense in which we are interpreting the latter term in this booklet. Such programmes are designed to be received by *individuals*, and, in many cases, incorporate features (such as active participation on the part of the learner or viewer) that are more generally associated with individualised learning than with mass instruction. Thus, they are only 'mass instruction' techniques in the sense that they are capable of being received simultaneously by large numbers of people.

Some strengths of educational broadcasts

Educational radio and television broadcasts have the same basic educational advantages as film and video presentations in that they constitute high-quality material that can be used as an effective substitute for or supplement to a conventional taught lesson as and when appropriate, thus enabling a teacher, lecturer or trainer to introduce variety into a course. They have, of course, a further important advantage in that the material is made available free of charge.

Some weaknesses of educational broadcasts

They also share some of the disadvantages of film and video in that they are always liable to be used in the wrong way (eg for keeping classes quiet or filling slots in timetables) and again entail handing over control of one's class to someone else. A further disadvantage is that the time of such broadcasts is fixed, so that they may be difficult (or even impossible) to fit into the timetable, and cannot normally be previewed before showing to a class. Both of these problems can, of course, be overcome by recording the programmes.

Mass practical and studio work

Within most teacher/institution-centred instructional systems, laboratory and studio-type classes are a standard method of teaching the practical aspects of a subject and of 'using the theory'. On the face of it, the use of practical sessions in this context would appear to be capable of doing nothing but good; nevertheless, careful analysis of their use is often necessary if the fullest potential of such techniques is to be realized.

Some strengths of practical classes

(i) For subjects in which the development of manipulative (psychomotor) skills is important, a certain amount of practical work is obviously necessary. Indeed, in many cases, there is simply no suitable alternative to actual 'hands-on' experience. However, it should be emphasized that such manipulative skills must be consciously taught for, and not just allowed to develop (hopefully) of their own accord.

(ii) Another strength of practical sessions is that students generally enjoy their participative nature, which may provide a stark contrast to other, more lecture-oriented classes. Also, such sessions may give students an idea of some of the real-life applications of topics which have only been treated theoretically in lectures, thus helping to demonstrate the relevance of the course as a whole.

Some weaknesses of practical classes

(i) Practical and laboratory classes tend to be very expensive in terms of time, manpower, equipment and materials. Hence, the reasons for using practical sessions should be well thought out, and they should not merely be used to fill allocated timetable slots, as is so often the case.

(ii) As mentioned in the notes on "Educational objectives", it is highly desirable that the objectives of each practical session should be stated *in advance*, so that both staff and students know what it is intended should be gained from the work. Unless this is done, the results may simply be 'recipe following', with little or no understanding of what is going on, nor appreciation of the purpose of the exercise.

(iii) Practical or laboratory work all too often bears little resemblance to the actual situations and problems which exist in real life, generally by being 'over-simplified'. Thus, the perceived relevance of such sessions is often much lower that might be possible with a little more thought and ingenuity on the part of the designers.

(iv) Although we have seen that one of the advantages of practical sessions is that they can be used to illustrate applications of more theoretical work, it must be pointed out that student-based laboratory sessions may not be the most economical or efficient means of showing these. In some cases, a simple lecture/demonstration may well be much more effective. Thus, while basic psychomotor skills may well be taught extremely effectively in the laboratory, question marks hang over the efficiency of the method in achieving other, higher-

level objectives that are commonly associated with 'practical work'.

The use of instructional materials in mass instruction

The different roles that instructional materials can play in mass instruction situations

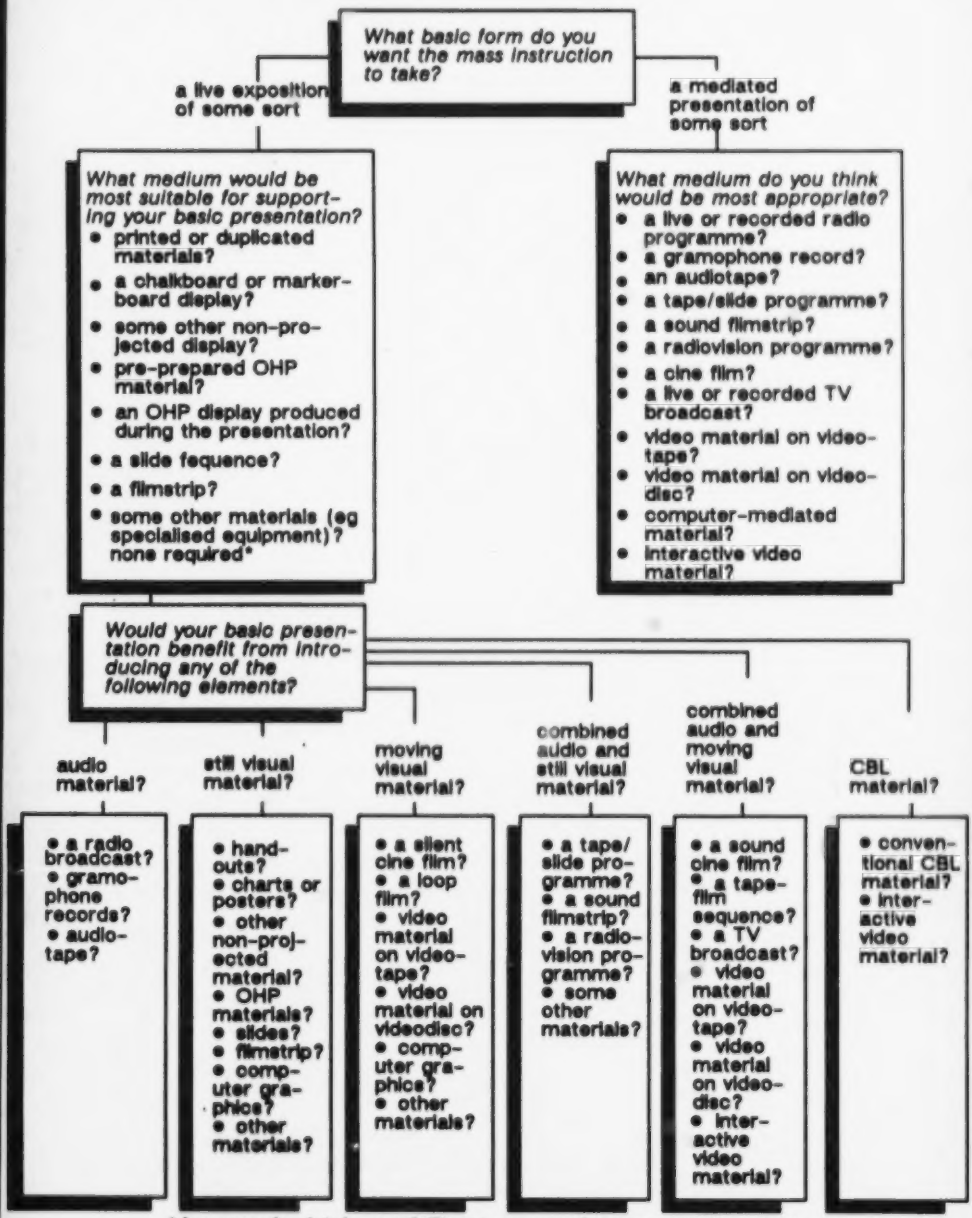
Within the context of the various techniques that can be employed as vehicles for mass instruction, audiovisual and other instructional materials can play a number of roles. In some cases (eg the use of visual aids, handouts or worksheets in a lecture or taught lesson), their role will probably be mainly supportive; in others (eg film or video presentations or off-air broadcasts) they can constitute the very essence of the method itself. In both cases, however, it is important that the materials be chosen because of their suitability for achieving the desired learning objectives, and not merely because they 'happen to be available' or because the teacher or instructor wants to 'fill in time'. Some of the ways in which audiovisual and other forms of instructional materials can be used in mass instruction are given below.

- Forming an integral part of the main exposition by providing 'signposts', guidance for note-taking, handouts for later reference, illustrative materials, worksheets, etc;
- Providing supplementary material, (background reading, remedial or extension materials, enrichment material, and so on);
- Increasing student motivation by introducing visually attractive, interesting or simply 'different' material into an otherwise routine lesson;
- Illustrating applications, relations, integration of one topic with another, and so on.

As is shown in other booklets in this series which deal specifically with instructional materials (booklets 10,11,13,14,15,16,17 and 18, a large number of different types of materials can be used to fulfil these various functions.

Choosing instructional materials for specific mass instructional situations

The various audiovisual and other instructional materials that can be used in different types of instructional situation are described in a separate booklet ("A review of the different types of instructional materials available to teachers and lecturers"), and it is strongly rec-


What basic form do you want the mass instruction to take?
a live exposition of some sort
a mediated presentation of some sort
What medium would be most suitable for supporting your basic presentation?
• printed or duplicated materials?
• a chalkboard or marker-board display?
• some other non-projected display?
• pre-prepared OHP material?
• an OHP display produced during the presentation?
• a slide sequence?
• a filmstrip?
• some other materials (eg specialised equipment)?
none required*
What medium do you think would be most appropriate?
• a live or recorded radio programme?
• a gramophone record?
• an audiotape?
• a tape/slide programme?
• a sound filmstrip?
• a radiovision programme?
• a cine film?
• a live or recorded TV broadcast?
• video material on videotape?
• video material on videodisc?
• computer-mediated material?
• interactive video material?
Would your basic presentation benefit from introducing any of the following elements?
audio material?
• a radio broadcast?
• gramophone records?
• audiotape?
still visual material?
• handouts?
• charts or posters?
• other non-projected material?
• OHP materials?
• slides?
• filmstrip?
• computer graphics?
• other materials?
moving visual material?
• a silent cine film?
• a loop film?
• video material on videotape?
• video material on videodisc?
• computer graphics?
• other materials?
combined audio and still visual material?
• a tape/slide programme?
• a sound filmstrip?
• a radiovision programme?
• some other materials?
combined audio and moving visual material?
• a sound cine film?
• a tape-film sequence?
• a TV broadcast?
• video material on videotape?
• video material on videodisc?
• interactive video material?
CBL material?
• conventional CBL material?
• interactive video material?

*Are you absolutely sure? There are very few presentations that would not benefit from the use of *some* sort of support materials.

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ommended that this should be studied carefully *before* attempting to choose materials for any particular purpose.

The algorithm on page 9 of this booklet (which it is hoped is self-explanatory) should then be used to help identify materials that *could* be suitable for the purpose in question, with the final choice depending on the preferences of the individual teacher or lecturer, the availability or ease of production of the materials, and so on.

Further reading

1. *A handbook of educational technology* by F Percival and H I Ellington; Kogan Page, London; 1984 (This introductory text on the principles and practice of educational technology discusses mass instruction in some detail; it also contains a comprehensive bibliography that lists a wide range of useful books and articles on the subject).

2. *Lecturing and explaining* by G A Brown; Methuen, London; 1978. (an excellent book that is highly recommended to all teachers, lecturers and trainers who have to carry out expository teaching).

3. *53 Interesting things to do in your lectures* by G Gibbs, S Habeshaw and T Habeshaw; Technical and Educational Services Ltd.; 1984. (Another excellent book that offers a large number of useful hints to the practising teacher or lecturer).

4. *What's the use of lectures?* by D A Bligh; Penguin, Harmondsworth; 1972. (An inexpensive paperback that deals in much more detail with many of the topics introduced in these notes; also highly recommended).